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Effects of the geomagnetic storm on October 29-31, 2003, on mid-latitude short-wave radio paths (the data of Doppler measurements)

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Abstract

We present the results of spectral analysis of a signal of oblique sounding of the ionosphere. This signal was received at the Doppler phase-angle measuring facility of Kazan University during the geomagnetic storm on October 29-31, 2003. On various short-wave (SW) radio paths, intense variations of Doppler frequency shift were observed. These variations exceeded variations observed on days without geomagnetic disturbances by an order of magnitude (and by two orders of magnitude during some short periods). Relatively short periods (1-3.5 min) are predominant on these days in variations of the Doppler frequency shift. It should be noted that, while for weak geomagnetic disturbances the response in the form of distortions of SW signal parameters was observed, as a rule, only for the paths coming from high-latitude regions, in the given case the effect was observed for all radio paths.

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